

GenCore version 4.5
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OM protein - protein search, using sw model

Run on: December 26, 2001, 10:31:54 ; Search time 25.02 Seconds
(without alignments)
1385.544 Million cell updates/sec

Title: US-09-497-967-7
Perfect score: 2540
Sequence: 1 MKNNTVILIIISLFNQIKS.....QCDFANFLISLLISYLL 468

Scoring table:

BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 522463 seqs, 74073290 residues

Total number of hits satisfying chosen parameters: 522463

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database : A_Geneseq_1101.*

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1: /SID88/gcgdata/geneseq/geneseq/AA1980.DAT.*
2: /SID88/gcgdata/geneseq/geneseq/AA1981.DAT.*
3: /SID88/gcgdata/geneseq/geneseq/AA1982.DAT.*
4: /SID88/gcgdata/geneseq/geneseq/AA1983.DAT.*
5: /SID88/gcgdata/geneseq/geneseq/AA1984.DAT.*
6: /SID88/gcgdata/geneseq/geneseq/AA1985.DAT.*
7: /SID88/gcgdata/geneseq/geneseq/AA1986.DAT.*
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9: /SID88/gcgdata/geneseq/geneseq/AA1988.DAT.*
10: /SID88/gcgdata/geneseq/geneseq/AA1989.DAT.*
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21: /SID88/gcgdata/geneseq/geneseq/AA2000.DAT.*
22: /SID88/gcgdata/geneseq/geneseq/AA2001.DAT.*

```

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	2540	100.0	468	21	55kd i-antigen pro
2	2540	100.0	468	21	55 kda immobilizat
3	2533	99.7	468	21	Synthetic 55kd i-a
4	921	36.3	442	21	48kd i-antigen pro
5	921	36.3	442	21	48 kda immobilizat
6	801.5	31.6	409	21	IAG48 (G1) surface
7	424	16.7	76	21	55kd i-antigen ami
8	404	15.9	72	21	55kd i-antigen ami
9	403	15.9	71	21	55kd i-antigen ami
10	389	15.3	72	21	55kd i-antigen ami
11	375	14.8	70	21	55kd i-antigen ami

12	373	14.7	70	21	AA25887	55kd i-antigen ami
13	212	8.3	72	21	AA25865	48kd i-antigen re
14	203.5	8.0	1700	21	AA18144	Plasmodium falcipa
15	188	7.4	1576	21	AA19802	Human laminin 2 ma
16	188	7.4	1576	21	AA48453	Human laminin 8 po
17	188	7.4	1584	21	AA19804	Human laminin 2 ga
18	188	7.4	1609	19	AA50898	Human laminin G1 c
19	188	7.4	1609	21	AA19801	Human laminin 2 ga
20	188	7.4	1609	21	AA48452	Human laminin 8 po
21	188	7.4	1617	21	AA19803	Human laminin 2 ga
22	185.5	7.3	1316	22	AA94754	Human laminin sequ
23	185	7.3	399	21	AA25890	VspAG-SI gene prod
24	179.5	7.1	1572	21	AA25862	48kd i-antigen re
25	179.5	7.1	1572	21	AA19806	Mouse laminin 2 ma
26	179.5	7.1	1572	21	AA48455	Mouse laminin 8 po
27	179.5	7.1	1605	21	AA19805	Mouse laminin 2 ga
28	179.5	7.1	1605	21	AA48454	Mouse laminin 8 po
29	179	7.0	467	21	AA79332	Human EGF repeat-c
30	178.5	7.0	1607	19	AA50897	Mouse laminin G1 c
31	175.5	6.9	3075	19	AA50892	Human laminin A ch
32	173.5	6.8	963	22	AA70255	TR16-short recepto
33	173.5	6.8	1027	22	AA70256	TR16-long receptor
34	172.5	6.8	89	21	AA25863	48kd i-antigen re
35	168.5	6.6	69	21	AA25864	48kd i-antigen re
36	166.5	6.6	969	14	AA41662	Paired basic amino
37	166	6.5	3084	19	AA50891	Mouse laminin A ch
38	159	6.3	516	20	AA70735	Human breast-speci
39	159	6.3	786	15	AA47066	Sequence of Crypt
40	159	6.3	3084	10	AA94758	Sequence of mouse
41	158	6.2	3084	21	AA19796	Mouse laminin 2 ma
42	158	6.2	3106	21	AA19795	Mouse laminin 2 al
43	157	6.2	3088	21	AA19794	Human laminin 2 ma
44	157	6.2	3089	21	AA19792	Human laminin 2 ma
45	157	6.2	3110	16	AA71730	Meropsin major subu

ALIGNMENTS

RESULT 1

AA25860

ID AA25860 standard; Protein; 468 AA.

AC AA25860;

XX

XX 18-DEC-2000 (first entry)

DT 55kd i-antigen protein of parasite isolate G5.

DE Immobilisation antigen; i-antigen; Ichthyophthiriasis; vaccine;

KW white spot disease; freshwater fish; immune response; infection control.

XX Ichthyophthirius multifiliis.

OS WO200046373-A1.

PN 10-AUG-2000.

PD 04-FEB-2000; 2000WO-US02962.

XX 04-FEB-1999; 99US-0118634.

XX 02-MAR-1999; 99US-0122372.

PR 17-MAR-1999; 99US-0124905.

PR 27-APR-1999; 99US-0131121.

XX {UYGE-} UNIV GEORGIA RES FOUND INC.

PA {CORR } CORNELL RES FOUND INC.

PA {CLAR/} CLARK T G.

PA {DICK/} DICKERSON H W.

PA {LINT/} LIN T.

XX Clark TG, Dickerson HW, Lin T;

XX

DR WPI; 2000-506071/45.

XX Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius

PT multifiliis, useful for prophylaxis and treatment of Ichthyophthirius

PT infection in fish

XX Claim 3; Figure 3; 144pp; English.

XX This invention relates to novel i-antigen polypeptide sequences.

XX I-antigens or immobilisation antigens are common to a variety of

CC hymenostomatid ciliates and their expression varies in response to

CC environmental stimuli. This invention relates to i-antigens in

CC Ichthyophthirius multifiliis, a protozoan which is an obligate parasite

CC of freshwater fish causing ichthyophthiriasis or white spot disease. The

CC invention includes two polypeptide and polynucleotide sequences for two

CC i-antigens, of 48 and 55 kD. Also included in the invention are

CC antibodies capable of binding to the nucleotide sequences and a method

CC for identifying I. multifiliis serotypes using the nucleotide sequences.

CC A composition (containing the i-antigen nucleotide) capable of eliciting

CC an immune response in fish is useful for prophylaxis, treatment or for

CC controlling I. multifiliis infection in fish. Polynucleotide or protein

CC vaccines comprising a portion of the amplified product encoding an

CC antigenic i-antigen polypeptide obtained is also useful for treating or

CC preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,

CC and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene

CC fragments identified in the invention. Sequences AAA97043-A97064

CC (excluding AAA97060) and AAA97071-A97088 represent primers used in the

CC isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and

CC AAB25893-B25906 represent i-antigen protein and peptide sequences.

XX Sequence 468 AA;

SQ

Query Match 100.0%; Score 2540; DB 21; Length 468;

Best Local Similarity 100.0%; Pred. No. 5.8e-194;

Matches 468; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MKNILVILLISLFTNOKSANCVPVGTENTAGQVDDLTGPANVCNCKNFYNNAAAFV 60

DB 1 mknllvllslftnqksancpvgvtentagqvdldgtpanvcncnkfnynnaafv 60

QY 61 PGASTCTPCQKRDAGAPNPATANLVITQCNVPCPAGTATAGGATDFAAITEVCNCR 120

DB 61 pgaastctpcqkrdagapnpatanlvitqcnvpcpagtataaggatdyaalitecvncr 120

QY 121 NFYNENAPNFNAGASTCTACPNVRVGGALTAGNAATIVAGCNVACPTGTALDDGVTTIDYV 180

DB 121 nfyenenapnfagnastctacpvnrvvggaltagnaativagcnvacptgtaldgvttdyv 180

QY 181 RSFTECVKRLNFYNGNNGNTPFNPGRKSQCTPCPAIKPANVAQATFLGNDATITACCNVA 240

DB 181 rsftecvkrlnfyngnngntpfnpgrksqctpcpaikpanvaqatlgndatitaqcnva 240

QY 241 CPDGTISAAGVNNWVAQNETCTNCAFNFNYPNAPNPNPNCSTCLPCPANKDYGAETAGG 300

DB 241 cpdgtisaagvnnwvaqnetctncapfnfnypnappnfnpnstclpcpankdygaetagg 300

QY 301 AATLAKCNCTACPDGTALASGATNYVLTOTELCNCAANFYFDGNFQAGSSRCRKACPANK 360

DB 301 aatlakcnclacpdgtalasgatnyvltotelcncaanfyfdgnnfqagsrrckacpank 360

QY 361 VQAVATAGGTATLIAQCALECPAGTVLTDGTTSTYKQAASECVCKAANFYTKQTDWVA 420

DB 361 vqavataggtatliaqcalecpagtvltldgttstykaasecvckaanfyttkqtdwva 420

QY 421 GIDFCTSCNKLISGAEANIPESAKNKIQDFANFLISILLISYLL 468

DB 421 gidfctscnkltsgaeanipesaknkigcdfanflisillisyll 468

RESULT 2

AA97177

ID AA97177 standard; Protein: 468 AA.

XX AA97177;

XX AC

XX 04-DEC-2000 (first entry)

DT

XX 55 kDa immobilization antigen.

DE

XX

XX BTU1; beta-tubulin; protein expression system; negative selection;

KW paclitaxel sensitivity; cell surface; antigen; protozoa; ciliate;

KW live vaccine; Ichthyophthirius multifiliis; immobilization-antigen;

KW i-antigen; freshwater; fish; protozoacide.

XX

OS Ichthyophthirius multifiliis.

XX

XX Key Location/Qualifiers

FH Misc-difference 1..468

FT /note= "Gln encoded by CAR or TAA"

FT

XX WO200046381-A1.

PN

XX 10-AUG-2000.

XX

XX 04-FEB-2000; 2000WO-US02966.

XX

XX 04-FEB-1999; 99US-0118634.

PR 02-MAR-1999; 99US-0122372.

PR 17-MAR-1999; 99US-0124905.

PR 27-APR-1999; 99US-0131121.

XX

XX (UYGE-) UNIV GEORGIA RES FOUND INC.

PA (GAER/) GAERTIG J

PA (DICK/) DICKERSON H W.

PA (CLAR/) CLARK T G.

XX

XX Gaertig J, Dickerson HW, Clark TG;

XX

XX WPI: 2000-514962/46.

DR N-PSDB; AA52136.

XX

XX Recombinant expression systems for expressing heterologous nucleic

PT acids and producing recombinant protein, comprises nonpathogenic

PT protozoa such as Tetrahymena resistant to paclitaxel

PT

XX Disclosure; Fig 3A; 83pp; English.

XX

XX Tetrahymena thermophila expresses two major beta-tubulin genes (BTU1 and

CC BTU2), which encode identical beta-tubulin proteins. Either of these two

CC genes (but not both at once) can be disrupted without a detectable change

CC in the cell phenotype. A K350L substitution in the BTU1 beta-tubulin

CC protein confers increased resistance to microtubule-depolymerizing drugs

CC and increased sensitivity to paclitaxel, a microtubule-stabilizing drug.

CC Cells carrying the BTU1-K350M allele can be transformed to paclitaxel

CC resistance by gene replacement of BTU1-K350M with a wild-type BTU1 gene

CC fragment, eliminating the need to incorporate a means for positive

CC selection. Where the host organism is not a T. thermophila mutant

CC containing the BTU1-K350M allele, BTU1::neol construct, which

CC substitutes the coding region of the neol gene (conferring resistance to

CC paromycin) for that of BTU1, can be used to generate BTU1 gene knockouts

CC and for positive selection. Heterologous nucleic acids (especially

CC encoding antigenic polypeptides) can be inserted into a BTU gene for

CC successful cell-surface expression that is maintained by way of negative

CC selection. Preferred expression vectors disrupt the BTU1-K350M gene by

CC homologous recombination-mediated insertion of a heterologous nucleic

CC acid, thereby restoring resistance to paclitaxel in the resulting

CC transgenic host. Transgenic ciliated protozoa are useful as live vaccines

CC for stimulating an immune response in a vertebrate. The transgenic

CC protozoan host cells are also useful for producing polyclonal antibodies

CC (claimed). In particular, Tetrahymena expressing Ichthyophthirius

CC multifiliis immobilization-antigen (i-antigen) protein on their surface

CC are effective vehicles for vaccination of freshwater fish against

CC infection by I. multifiliis.

XX

SQ Sequence 468 AA;

Query Match 100.0%; Score 2540; DB 21; Length 468;
 Best Local Similarity 100.0%; Pred. No. 5.8e-194;
 Matches 468; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MKNNTLVILISLFINQKISANCPVGTETTAGQVDDLGTTPANCVCNCKNFYNNAAAFV 60
 DB 1 mknntlvilislfinqlksancpvgteetntagvddlgtpancvcncqknfyynnaaafv 60

QY 61 PGASTCTPCPKKADAGQPNPPATANLVTCQNVKCPAGTAIAGADYAAIITECVNCRI 120
 DB 61 pgasctctpcpkkdagapnppatanlvtcqnvkcpagtaiaagadyaaiitecvncr1 120

QY 121 NFYNENAPNFNAGASTCTACDPNVRVGGALTAGNAATIVACNVCACPTGTALDDGVTTDYV 180
 DB 121 nfyenenapnfagastctacpvnrvvggaltagnaativacnvcacptgtaldgdvttdyv 180

QY 181 RSFTECVKCRNLNFYNGNNGNTFPNPKSQCTPCPAIKPANVAQATLGNDAITTAQCNCVA 240
 DB 181 rsftecvkcrlnfyngnngntfpnpksqctpcpaikpanvaqatlgndaittaqcncva 240

QY 241 CPDGTISAAGVNNWVAQNTCTNCAPNFYNNAPNFNPGNSTCLPCPANKDYGAETAGG 300
 DB 241 cpdgtisaaagvnnwvaqntctncapnfynnpnpgnstclpcpankdygaetagg 300

QY 301 AATLAKQCNIACPDGTATIAQCALECPAGTVLTDGTTSTYKQAASECVKCAANFYTTKTQDWVA 420
 DB 301 aatlakqcniacpdgtatliaqcalecpagtvltldgttstykqaasecvkcaanfyttktqdwva 420

QY 421 GIDTCTSCNKKLTSGAEANLPESAKNKIQCDNFANFLISILLISYLL 468
 DB 421 gidtctscnkkltsgaeanlpesaknkicgdfanfllisillisyyl 468

RESULT 3
 AAB25882
 ID AAB25882 standard; Protein; 468 AA.
 XX AAB25882;
 DT 18-DEC-2000 (first entry)
 DE Synthetic 55kd i-antigen protein L6P.
 XX
 KW Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
 KW white spot disease; freshwater fish; immune response; infection control.
 XX
 OS Ichthyophthirius multifiliis.
 OS Synthetic.
 XX
 PN W0200046373-A1.
 XX
 XX 10-AUG-2000.
 XX
 PF 04-FEB-2000; 2000HO-US02962.
 XX
 PR 04-FEB-1999; 99US-0118634.
 PR 02-MAR-1999; 99US-0122372.
 PR 17-MAR-1999; 99US-0124905.
 PR 27-APR-1999; 99US-0131121.
 XX
 PA (UYGB-) UNIV GEORGIA RES FOUND INC.
 PA (CORR) CORNELL RES FOUND INC.
 PA (CLAR/) CLARK T G.
 PA (DICK/) DICKERSON H W.
 PA (LINT/) LIN T.
 XX
 PI Clark TG, Dickerson HW, Lin T;

XX WPI; 2000-506071/45.
 DR Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
 XX multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
 PT infection in fish -
 PT Example 5; Figure 14; 144pp; English.
 PS
 XX This invention relates to novel i-antigen polypeptide sequences.
 CC I-antigens or immobilisation antigens are common to a variety of
 CC hymenostomatid ciliates and their expression varies in response to
 CC environmental stimuli. This invention relates to i-antigens in
 CC Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
 CC of freshwater fish causing ichthyophthiriasis or white spot disease. The
 CC invention includes two polypeptide and polynucleotide sequences for two
 CC i-antigens, of 48 and 55 kD. Also included in the invention are
 CC antibodies capable of binding to the nucleotide sequences and a method
 CC for identifying I. multifiliis serotypes using the nucleotide sequences.
 CC A composition (containing the i-antigen nucleotide) capable of eliciting
 CC an immune response in fish is useful for prophylaxis, treatment or for
 CC controlling I. multifiliis infection in fish. Polynucleotide or protein
 CC vaccines comprising a portion of the amplified product encoding an
 CC antigenic i-antigen polypeptide obtained is also useful for treating or
 CC preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,
 CC and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
 CC fragments identified in the invention. Sequences AAA97043-A97064
 CC (excluding AAA97060) and AAA97071-A97088 represent primers used in the
 CC isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
 CC AAB25893-B25906 represent i-antigen protein and peptide sequences.
 XX
 XX Sequence 468 AA;
 SQ

Query Match 99.7%; Score 2533; DB 21; Length 468;
 Best Local Similarity 99.8%; Pred. No. 2.1e-193;
 Matches 467; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 1 MKNNTLVILISLFINQKISANCPVGTETTAGQVDDLGTTPANCVCNCKNFYNNAAAFV 60
 DB 1 mknntlvilislfinqlksancpvgteetntagvddlgtpancvcncqknfyynnaaafv 60

QY 61 PGASTCTPCPKKADAGQPNPPATANLVTCQNVKCPAGTAIAGADYAAIITECVNCRI 120
 DB 61 pgasctctpcpkkdagapnppatanlvtcqnvkcpagtaiaagadyaaiitecvncr1 120

QY 121 NFYNENAPNFNAGASTCTACDPNVRVGGALTAGNAATIVACNVCACPTGTALDDGVTTDYV 180
 DB 121 nfyenenapnfagastctacpvnrvvggaltagnaativacnvcacptgtaldgdvttdyv 180

QY 181 RSFTECVKCRNLNFYNGNNGNTFPNPKSQCTPCPAIKPANVAQATLGNDAITTAQCNCVA 240
 DB 181 rsftecvkcrlnfyngnngntfpnpksqctpcpaikpanvaqatlgndaittaqcncva 240

QY 241 CPDGTISAAGVNNWVAQNTCTNCAPNFYNNAPNFNPGNSTCLPCPANKDYGAETAGG 300
 DB 241 cpdgtisaaagvnnwvaqntctncapnfynnpnpgnstclpcpankdygaetagg 300

QY 301 AATLAKQCNIACPDGTATIAQCALECPAGTVLTDGTTSTYKQAASECVKCAANFYTTKTQDWVA 420
 DB 301 aatlakqcniacpdgtatliaqcalecpagtvltldgttstykqaasecvkcaanfyttktqdwva 420

QY 421 GIDTCTSCNKKLTSGAEANLPESAKNKIQCDNFANFLISILLISYLL 468
 DB 421 gidtctscnkkltsgaeanlpesaknkicgdfanfllisillisyyl 468

RESULT 4
 AAB25859

ID	AAB25859	standard; Protein; 442 AA.
XX		
AC	AAB25859;	
XX		
DT	18-DEC-2000	(first entry)
XX		
DE	48kD	i-antigen protein sequence.
XX		
KW	Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;	
XX	white spot disease; freshwater fish; immune response; infection control.	
XX		
OS	Ichthyophthirius multifiliis.	
XX		
PN	WO200046373-A1.	
XX		
PD	10-AUG-2000.	
XX		
PF	04-FEB-2000; 2000WO-US02962.	
XX		
PR	04-FEB-1999;	99US-0118634.
PR	02-MAR-1999;	99US-0122372.
PR	17-MAR-1999;	99US-0124905.
PR	27-APR-1999;	99US-0131121.
XX		
PA	{UYCE-}	UNIV GEORGIA RES FOUND INC.
PA	{CORR }	CORNELL RES FOUND INC.
PA	{CLARK/}	CLARK T G.
PA	{DICK/}	DICKERSON H W.
PA	{LINT/}	LIN T.
XX		
PT	Clark TG,	Dickerson HW, Lin T;

WPT; 2000-506071/45.
 Novel i-antigen polypeptides and polynucleotides from *Ichthyophthirius multifiliis*, useful for prophylaxis and treatment of *Ichthyophthirius* infection in fish -
 Claim 1; Figure 1; 144pp; English.
 This invention relates to novel i-antigen polypeptide sequences. I-antigens or immobilisation antigens are common to a variety of hymenostomatid ciliates and their expression varies in response to environmental stimuli. This invention relates to i-antigens in *Ichthyophthirius multifiliis*, a protozoan which is an obligate parasite of freshwater fish causing ichthyophthiriasis or white spot disease. The invention includes two polypeptide and polynucleotide sequences for two i-antigens, of 48 and 55 kD. Also included in the invention are antibodies capable of binding to the nucleotide sequences and a method for identifying *I. multifiliis* serotypes using the nucleotide sequences. A composition (containing the i-antigen nucleotide), capable of eliciting an immune response in fish is useful for prophylaxis, treatment or for controlling *I. multifiliis* infection in fish. Polynucleotide or protein vaccines comprising a portion of the amplified product encoding an antigenic i-antigen polypeptide obtained is also useful for treating or preventing *I. multifiliis* infection in fish. Sequences AAA97036-A97042, and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene fragments identified in the invention. Sequences AAA97043-A97064 (excluding AAA97060) and AAA97071-A97088 represent primers used in the isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and AAB25893-B25906 represent i-antigen protein and peptide sequences.
 Sequence 442 AA;
 Query Match 36.3%; Score 921; DB 21; Length 442;
 Best Local Similarity 41.8%; Pred. No. 3.4e-65;
 Matches 214; Conservative 45; Mismatches 139; Indels 114; Gaps 19;
 1 MKNNTLVILLIISLFTNOKSKANPCVGTETNTAGQVD---DLGTPTANCVNCKNFYYNNA 56
 1 mKynllllllllsflneiravpcpdtgtq-agltldvgaadlgt---cvcncrpfyyogsg 56

PA (DICK/) DICKERSON H W.
 PA (LINT/) LIN T.
 PI Clark TG, Dickerson HW, Lin T;
 XX WPI; 2000-506071/45.
 DR
 XX Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
 PT multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
 PT infection in fish -
 XX Disclosure; Figure 5b; 144pp; English.
 PS
 XX This invention relates to novel i-antigen polypeptide sequences.
 CC I-antigens or immobilisation antigens are common to a variety of
 CC hymenostomatid ciliates and their expression varies in response to
 CC environmental stimuli. This invention relates to i-antigens in
 CC Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
 CC of freshwater fish causing ichthyophthiriasis or white spot disease. The
 CC invention includes two polypeptide and polynucleotide sequences for two
 CC i-antigens, of 48 and 55 kD. Also included in the invention are
 CC antibodies capable of binding to the nucleotide sequences and a method
 CC for identifying I. multifiliis serotypes using the nucleotide sequences.
 CC A composition (containing the i-antigen nucleotide) capable of eliciting
 CC an immune response in fish is useful for prophylaxis, treatment or for
 CC vaccines comprising a portion of the amplified product encoding an
 CC antigenic i-antigen polypeptide obtained in fish. Polynucleotide or protein
 CC preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,
 CC and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
 CC fragments identified in the invention. Sequences AAA97043-A97064
 CC (excluding AAA97060) and AAA97071-A97088 represent primers used in the
 CC isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
 CC AAB25893-B25906 represent i-antigen protein and peptide sequences.
 XX Sequence 72 AA;
 SQ
 Query Match 15.9%; Score 404; DB 21; Length 72;
 Best Local Similarity 100.0%; Pred. No. 4.1e-25;
 Matches 72; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 23 CPVGTETNTAGQVDLGTTPANCVNCQKNFYNNAAAFVPGASTCTPCPKKdagaqpnp 82
 Db 1 cpvgtetntagqvddlgtptancvncqknfyynnaafvpgastctpcpkkddagaqpnp 60
 QY 83 ATANLVTCNVK 94
 Db 61 atanlvtcnvk 72
 RESULT 9
 AAB25886 ID AAB25886 standard; Peptide; 71 AA.
 XX AAB25886;
 AC
 XX 18-DEC-2000 (first entry)
 DT
 XX 55kD i-antigen amino acid repeat sequence SEQ ID 58.
 DE
 XX Immobilisation antigen; i-antigen; Ichthyophthiriasis; vaccine;
 KW white spot disease; freshwater fish; immune response; infection control.
 KW Ichthyophthirius multifiliis.
 OS
 XX WO200046373-A1.
 PN
 XX 10-AUG-2000.
 PD
 XX 04-FEB-2000; 2000WO-US02962.
 PF
 XX 04-FEB-1999; 99US-0118634.
 PR

PR 02-MAR-1999; 99US-0122372.
 PR 17-MAR-1999; 99US-0124905.
 PR 27-APR-1999; 99US-0131121.
 XX
 PA (UYGE-) UNIV GEORGIA RES FOUND INC.
 PA (CORR) CORNELL RES FOUND INC.
 PA (CLAR/) CLARK T G.
 PA (DICK/) DICKERSON H W.
 PA (LINT/) LIN T.
 XX
 PI Clark TG, Dickerson HW, Lin T;
 XX WPI; 2000-506071/45.
 DR
 XX Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
 PT multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
 PT infection in fish -
 XX Disclosure; Figure 5b; 144pp; English.
 PS
 XX This invention relates to novel i-antigen polypeptide sequences.
 CC I-antigens or immobilisation antigens are common to a variety of
 CC hymenostomatid ciliates and their expression varies in response to
 CC environmental stimuli. This invention relates to i-antigens in
 CC Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
 CC of freshwater fish causing ichthyophthiriasis or white spot disease. The
 CC invention includes two polypeptide and polynucleotide sequences for two
 CC i-antigens, of 48 and 55 kD. Also included in the invention are
 CC antibodies capable of binding to the nucleotide sequences and a method
 CC for identifying I. multifiliis serotypes using the nucleotide sequences.
 CC A composition (containing the i-antigen nucleotide) capable of eliciting
 CC an immune response in fish is useful for prophylaxis, treatment or for
 CC vaccines comprising a portion of the amplified product encoding an
 CC antigenic i-antigen polypeptide obtained in fish. Polynucleotide or protein
 CC preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,
 CC and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
 CC fragments identified in the invention. Sequences AAA97043-A97064
 CC (excluding AAA97060) and AAA97071-A97088 represent primers used in the
 CC isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
 CC AAB25893-B25906 represent i-antigen protein and peptide sequences.
 XX Sequence 71 AA;
 SQ
 Query Match 15.9%; Score 403; DB 21; Length 71;
 Best Local Similarity 100.0%; Pred. No. 4.8e-25;
 Matches 71; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 241 CPDGTISAAGYNNWVAQNTCTNCAPNFYNNAPNPGNSTCLPCPANKDYGAETAGG 300
 Db 1 cpdgtisaagynnwvaqntctncapnfynnapnpgnstclpcpankdygaetagg 60
 QY 301 AATLAKOCNTA 311
 Db 61 aatlakocnia 71
 RESULT 10
 AAB25888 ID AAB25888 standard; Peptide; 72 AA.
 XX AAB25888;
 AC
 XX 18-DEC-2000 (first entry)
 DT
 XX 55kD i-antigen amino acid repeat sequence SEQ ID 60.
 DE
 XX Immobilisation antigen; i-antigen; Ichthyophthiriasis; vaccine;
 KW white spot disease; freshwater fish; immune response; infection control.
 KW Ichthyophthirius multifiliis.
 OS
 XX

DE WO200046373-A1. 55kD i-antigen amino acid repeat sequence SEQ ID 56.
XX Immobilisation antigen; i-antigen; Ichthyophthiriasis; vaccine;
KW white spot disease; freshwater fish; immune response; infection control.
XX Ichthyophthirius multifiliis.
OS
XX
XX WO200046373-A1.
PN
XX 10-AUG-2000.
PD
XX
XX 04-FEB-2000; 2000WO-US02962.
PF
XX
XX 04-FEB-1999; 99US-0118634.
PR
XX 02-MAR-1999; 99US-0122372.
PR
XX 17-MAR-1999; 99US-0124905.
PR
XX 27-APR-1999; 99US-0131121.
PR
XX
XX (UYGE-) UNIV GEORGIA RES FOUND INC.
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PA (DICK/) DICKERSON H W.
PA (LINT/) LIN T.
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CC and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC fragments identified in the invention. Sequences AAA97043-A97064
CC (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
XX Sequence 72 AA;

Query Match 14.8%; Score 375; DB 21; Length 70;
Best Local Similarity 100.0%; Pred. No. 8e-23;
Matches 70; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 95 CPAGTAIAGGATDYAAIITECVNCRINFYNENAPNFNAGASTCTACPVNRVGGALTAGNA 154
Db 1 cpagtaiaaggatdyaaitecvncrinfynenapnfnagastctacpvnrvvgaltagna 60

QY 155 ATTAQCENVA 164
Db 61 ativagcnva 70

RESULT 12

PN WO200046373-A1.
XX 10-AUG-2000.
XX 04-FEB-2000; 2000WO-US02962.
XX
XX 04-FEB-1999; 99US-0118634.
PR
XX 02-MAR-1999; 99US-0122372.
PR
XX 17-MAR-1999; 99US-0124905.
PR
XX 27-APR-1999; 99US-0131121.
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XX
XX Sequence 72 AA;

Query Match 15.3%; Score 389; DB 21; Length 72;
Best Local Similarity 100.0%; Pred. No. 6.4e-24;
Matches 72; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 382 CPAGTVLTDGTTSTYKQAASCEVCVKAANFTTKQTDWVAGIDTCTSCNKKLTSGAENLP 441
Db 1 cpagtvldgtstykqaasecvkcaanfyttktqtdwvagitctscnkkltsgaenlp 60

QY 442 ESAKNIQCDA 453
Db 61 esakniqcda 72

RESULT 11
ID AAB25884
XX AAB25884 standard; Peptide; 70 AA.
AC AAB25884;
XX
XX 18-DEC-2000 (first entry)
XX

AAB25887
ID AAB25887 standard; Peptide; 70 AA.
AC AAB25887;

XX
XX DT 18-DEC-2000 (first entry)
XX
XX DE 55kd i-antigen amino acid repeat sequence SEQ ID 59.
XX
XX KW Immobilisation antigen; i-antigen; Ichthyophthiriasis; vaccine;
XX white spot disease; freshwater fish; immune response; infection control.
XX
XX OS Ichthyophthirius multifiliis.

XX PN WO200046373-A1.

XX PD 10-AUG-2000.

XX PF 04-FEB-2000; 2000WO-US02962.

XX PR 04-FEB-1999; 99US-0118634.

XX PR 02-MAR-1999; 99US-0122372.

XX PR 17-MAR-1999; 99US-0124905.

XX PR 27-APR-1999; 99US-0131121.

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XX fragments identified in the invention. Sequences AAA97043-A97064
XX (excluding AAA97060) and AAA97071-A97088 represent primers used in the
XX isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
XX AAB25893-B25906 represent i-antigen protein and peptide sequences.

XX SQ Sequence 70 AA;

Query Match 14.7%; Score 373; DB 21; Length 70;
Best Local Similarity 100.0%; Pred. No. 1.2e-22;
Matches 70; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 312 CPDGTALASGATNVILQTECLNCAANFYDGNFQAGSSRCACAPANKVQGVAVATAGGT 371
DB 1 cpdgtalasgathnyllqtclncaanfydgnfnfagssrcackacpankvqgvavataggt 60
|||||

QY 372 ATLIAQCALE 381
DB 61 attliaqcale 70
|||||

RESULT 13
AAB25865

ID AAB25865 standard; Protein; 72 AA.

XX AC AAB25865;

XX DT 18-DEC-2000 (first entry)

XX DE 48kd i-antigen repeat amino acid sequence SEQ ID 12.

XX KW Immobilisation antigen; i-antigen; Ichthyophthiriasis; vaccine;
XX white spot disease; freshwater fish; immune response; infection control.

XX OS Ichthyophthirius multifiliis.

XX PN WO200046373-A1.

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XX isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
XX AAB25893-B25906 represent i-antigen protein and peptide sequences.

XX SQ Sequence 72 AA;

Disclosure: Page 29-33; 577pp; English.

The present invention describes proteins and their fragments (I) encoded by chromosome 2 of the human malarial parasite, *Plasmodium falciparum*. Also described are: (1) nucleotide sequences (II) encoding (I); and (2) vaccines against *P. falciparum* infection comprising (I) or (II). (I) and (II) are useful for the development of vaccines against *P. falciparum* infection. (I) and polyclonal antisera or a monoclonal antibody raised to immunogens comprising the sequences of (I), are useful in the detection of infection with *P. falciparum*. Furthermore, (I) (especially when they are rifins or secreted or membrane proteins) can aid the identification of drugs to treat or prevent *P. falciparum* infection, or they can be used to identify drug resistance in *P. falciparum*. Sequencing of the plasmodium chromosome 2 and the subsequent identification of proteins encoded by it will help to expand our understanding of parasite biology, a process hampered by the complexity of the parasitic lifecycle, and provide new targets for vaccine and drug development. Parasite resistance to drugs and mosquito resistance to insecticides have led to a resurgence of malaria in many parts of the world, and there is a pressing need for vaccines and new drugs. AAAY00078 to AAAY02087 and AAB18144 to AAB18352 represent nucleotide and protein sequences given in the present invention, but which are not specifically mentioned within the specification.

XX

